11 Thresher sharks in the Northeast Atlantic and Mediterranean Sea

11.1 Stock distribution

Two species of thresher occur in the ICES area: common thresher, *Alopias vulpinus* and bigeye thresher, *A. superciliosus.* Of these species, *A. vulpinus* is the main species encountered on the continental shelf of the ICES area.

There is little information on the stock identity of these species, which have a near circumglobal distribution in tropical and temperate waters. WGEF assumes there to be a single stock of *A. vulpinus* in the NE Atlantic and Mediterranean Sea, with this stock extending into the CECAF area. The presence of a nursery ground in the Alboran Sea provides the rationale for including the Mediterranean Sea within the stock area. Further information on stock identity is given in the Stock Annex drafted in 2009 (ICES, 2009). This stock annex requires future revision in particular as a consequence of landings data revision carried out in recent years by WGEF.

11.2 The fishery

11.2.1 History of the fishery

There are no target fisheries for thresher sharks in the NE Atlantic. Both species are a bycatch in longline fisheries for tuna and swordfish, and would have been taken in earlier pelagic drift net fisheries. Common thresher is an occasional bycatch in gillnet fisheries. Fisheries data for the ICES area are limited and unreliable. It is likely that some commercial data for the two species are confounded.

In the Mediterranean Sea, where the two thresher sharks species occur, there are no fisheries targeting either of these species. In this area the two species are bycatches in various fisheries, including the Moroccan driftnet fishery in the southwest Mediterranean. Both species are also caught in industrial and semi-industrial longline fisheries and artisanal gillnet fisheries operating in the area.

11.2.2 The fishery in 2020

No new information.

11.2.3 ICES Advice applicable

ICES advice for thresher sharks is given in every 4 years, and the first to be provided was in 2015, stating that "*ICES advises that when the precautionary approach is applied for common thresher shark Alopias vulpinus and bigeye thresher shark Alopias superciliosus in the Northeast Atlantic, fishing mortality should be minimized and no targeted fisheries should be permitted. This advice is valid for 2016 to 2019".* The latest advice provided by ICES for this stock was in 2019 stating that "*ICES advises that when the precautionary approach is applied, there should be zero catch in each of the years 2020–2023.*"

11.2.4 Management applicable

Since 2009, the EU regulations regarding thresher sharks are in the annual TAC regulations in the section on the ICCAT convention area and stipulates that *thresher sharks* should not be fished, retained on board or transhipped (see Council regulation 2021/92 of 28 January 2021).

Council Regulation No. 1185/2003 prohibits the removal of shark fins of these species, and subsequent discarding of the body. This regulation is binding on EC vessels in all waters and non-EC vessels in Community waters.

11.3 Catch data

11.3.1 Landings

Landings of thresher sharks are reported irregularly and are variable; from 4–198 t in the North and Eastern Atlantic and Mediterranean Sea from 1997 to 2019 (ICCAT and national data; tables 11.1–11.2). There can be large inter-annual variation in reported landings, as well as differences in values reported to ICCAT (tables 11.1–11.2) and ICES (Table 11.3). Further studies to review landings data for thresher sharks are required and should be included in the proposed joint meetings with the ICCAT shark subgroup. Compared to pre-2020 reports, landings presented this year (tables 11.1–11.3) were restricted to landings reported in the Northeast Atlantic and Mediterranean Sea, excluding other areas. Landings now considered are therefore lower than previously.

An unknown proportion of landings is reported as generic 'sharks'. Historically, the main European countries reporting landings of thresher sharks were Portugal, Spain and France, although the large quantities reported by Portugal to ICCAT in 2006 and 2007 require a further verification. In the most recent years, only France has maintained high levels of landings of thresher sharks (almost 99% of landings in 2020).

As well as being caught and landed from fisheries for tuna and tuna-like species, thresher sharks are also a bycatch in continental shelf fisheries in the ICES area, including subareas 4, 6–9.

11.3.2 Discards

Limited data are available.

11.3.3 Quality of catch data

Thresher sharks have not been reported consistently, either at species-specific or generic level. There are also some discrepancies between some data sources. Landings of thresher shark in coastal waters are most likely to represent *A. vulpinus*, but some of these landings may also be reported as 'sharks nei'.

11.3.4 Discard survival

There is limited information on discard survival from European fisheries, but there have been several studies elsewhere in the world. Braccini *et al.* (2012) found that about two thirds of thresher shark captured in gillnets were dead, even with a short soak time, although this was based on a small sample size. Moderate to high levels of mortality have been reported in pelagic longline fisheries, with most studies indicating that about half of the thresher sharks captured

are in poor condition or dead (see Ellis *et al.*, 2017 and references therein). Immediate mortality of bigeye thresher shark (*A. superciliosus*) caught in swordfish longline fisheries in the Pacific has been estimated between 7% (Aalbers, 2021) and 25% (Musyl *et al.*, 2011).

11.4 Commercial catch composition

Length–frequency distributions for *A. vulpinus* were collected under the Data Collection Regulation (DCR) programme by observers on board French vessels (see ICES, 2015). Given the potential problems of how thresher sharks are measured (standard length, fork length, total length), improved standardisation of length-based information is required.

11.5 Commercial catch and effort data

Limited data on landing and effort are available for the ICES area. ICES and ICCAT should cooperate to collate and interpret commercial catch data from high seas and shelf fisheries.

11.6 Fishery-independent surveys

No fishery-independent data are available for the NE Atlantic.

11.7 Life-history information

Various aspects of the life history, including conversion factors, and nursery grounds for these species are included in the Stock Annex.

Alopias vulpinus

There have been a few recent published studies on *A. vulpinus*. Cartamil *et al.* (2016) and Kinney *et al*. (2020) examined the movements of *A. vulpinus* along the western coast of the USA and Mexico; Natanson *et al.* (2016) provided revised growth curves for *A. vulpinus*, in the NW Atlantic; and Finotto *et al.* (2016) commented on the occurrence of *A. vulpinus* in the northern Adriatic Sea.

Relevant information from these studies should be reviewed for future work by WGEF.

11.7.1 Movements and migrations

The "Alop" Project tagged two specimens in the Gulf of Lions. The behaviour of one female (135 cm L_T) was recorded for 200 days. Horizontal movements within a restricted area of the Gulf of Lions were observed; the female stayed in coastal shelf areas from July to September, moving to deeper waters afterwards, probably as a response to the seasonal drop in sea surface temperature. Another specimen (120 cm L_T) stayed mostly at depths of 10–20 m with occasional dives to 800 m.

Cao *et al.* (2012) provided data for *A. superciliosus* and *A. vulpinus* around the Marshall Islands (Pacific, West Central), where they occurred at depths of 240–360 m and 160–240 m, temperatures of 10–16°C and 18–20°C and salinities of 34.5–34.7 and 34.5–34.8, respectively.

A. superciliosus

Nakano *et al*. (2003) conducted an acoustic telemetry study to identify the short-term horizontal and vertical movement patterns of two immature female *A. superciliosus* in the eastern tropical Pacific Ocean (summer 1996). Distinct crepuscular vertical migrations were observed; specimens

often occurring at 200–500 m depth during the day and at 80–130 m depth at night, with slow ascents and relatively rapid descents during the night, the deepest dive being 723 m. The estimate of the mean swimming speed over the ground ranged from 1.32–2.02 km h^{-1}.

Weng and Block (2004) studied diel vertical migration patterns of two *A. superciliosus* that were caught and tagged with pop-up satellite archival tags in the Gulf of Mexico and near Hawaii. Both showed strong diel movement patterns, spending most of the day below the thermocline (waters of 10°C at 300–500 m and 400–500 m) and occurring in warmer (> 20°C) surface mixed layers above the thermocline (10–50 m) at night.

Carlson and Gulak (2012) provided results from a tagging programme with archival tags deployed on *A. superciliosus*. One specimen exhibited a diurnal vertical diving behaviour, spending most of their time between 25 and 50 m depth in waters between 20 and 22°C while the other dove down to 528 m. Deeper dives occurred more often during the day, and by night they tended to stay above the thermocline.

In the tropical northeast Atlantic fifteen bigeye threshers were tagged with pop-up satellite archival tags (PSATs) in 2012 and 2014, with successful transmissions received from 12 tags for a total of 907 tracking days. Marked diel vertical movements were recorded on all specimens, with most of the daytime spent in deeper colder water and nighttime spent in warmer water closer to the surface. The operating depth of the pelagic longline gear was measured and it was concluded that there is spatial overlap between the fishery and the habitat particularly during the night and overlap is higher for juveniles (Coelho *et al.*, 2014).

A. vulpinus

Kinney *et al.* (2020) studied the seasonal movements of 25 tagged common thresher sharks off the west coast of North America. They provided evidence for movements driven by the biological state (body size, sex) and environmental drivers, with younger individuals mostly remaining in an identified nursery area: the Southern California Bight, while larger individuals frequently moved out of the bay in spring and winter.

Based on catch data and data collected by onboard observers along the eastern coast of the US, Kneebone *et al.* (2020) found evidence for seasonal changes in distribution, with individuals found at more northern latitudes in the summer. Young of the year were almost exclusively found in continental shelf waters north of 33.5°N, mostly in shallow waters, and seemed to display reduced migrations compared to older individuals. No evidence for differences in movements of males and females was found.

11.7.2 Nursery grounds

Further information on potential nursery areas is given in the Stock Annex.

A. superciliosus

Nursery areas for *A. superciliosus* occur off the southwestern Iberian Peninsula and Strait of Gibraltar (Moreno and Moron, 1992).

A. vulpinus

Juvenile *A. vulpinus* are known to occur in the English Channel and southern North Sea (Ellis, 2004). The capture of newborn individuals in northern Adriatic Sea supports the presence of a nursery in this area (Finotto *et al*. 2016).

11.7.3 Diet

Both *A. vulpinus* and *A. superciliosus* feed mostly on small pelagic fish, including mackerel and clupeids, as well as squid and octopus (e.g. Preti *et al*. 2012).

11.8 Exploratory assessments

Both *A. vulpinus* and *A. superciliosus* were included in a Productivity-Susceptibility Analysis (PSA) for the pelagic fish assemblage (ICCAT, 2009). However, the lack of reliable landing data, and absence of fishery-independent data hampered the assessment of the two thresher stocks. A bycatch per unit effort (BPUE) was derived for bigeye thresher shark caught by the Portuguese longline fleet between 2008 and 2016 (ICCAT, 2020).

Along the west coast of North America, *A. vulpinus* is assumed to be a single, well-mixed stock. This assumption is supported by genetics, tagging data, and seasonal movements. This stock was assessed with Stock Synthesis modelling platform (v3.24U). The results obtained included the estimation of management quantities for eight fishing fleets operating in USA and Mexico waters (Teo *et al*., 2018).

A Bayesian population modelling tool integrating separable virtual population analysis, per-recruit models and age-structured demographic analysis was developed for the *A. superciliosus* population in an area subset of the western North Pacific. The results from the risk analysis revealed that only low levels of fishing pressure (10% of the current fishing pressure) over a wide range of ages could maintain a relatively low risk of population decline for bigeye threshers. Sensitivity testing indicated that the model is robust to prior specification (Tsai *et al*., 2019). The results from the analysis of sequences of mitochondrial DNA showed no significant differences between populations of *A. superciliosus* from southern Atlantic and the Indian Ocean further suggesting the existence of a high dispersal of this species (Morales *et al*., 2018).

11.9 Stock assessment

In 2019, *A. vulpinus* and *A. superciliosus* were both assessed under the ICES framework for category 6 (ICES, 2012). In accordance to this, ICES considered that for stocks without information on abundance or exploitation, as is the case of these two stocks, a precautionary reduction of catches should be implemented unless there is ancillary information clearly indicating that the current level of exploitation is appropriate for the stock.

11.10 Quality of assessments

At the Northeast Atlantic level, there is no stock assessment for common thresher or bigeye thresher. However, in 2012, ICCAT conducted an Ecological Risk Assessments for elasmobranchs to evaluate the biological productivity of these stocks and a susceptibility analysis to assess their propensity to capture and mortality in pelagic longline fisheries (ICCAT, 2011).

Historically, landing data for the entire stock area is uncertain for both common thresher and bigeye thresher. Some historical commercial catch-per-unit-effort data are available for parts of the stock area, but data for the two species may be confounded. It is unclear as to how representative CPUE data would be for informing on trends in the two stocks' abundance.

Species-specific landings are required, and future quantitative assessments should be undertaken in collaboration with ICCAT.

11.11 Reference points

No reference points have been proposed for these stocks.

11.12 Conservation considerations

In 2015, a revision of the Red List for European Marine Fishes classified both *Alopias vulpinus* and *A. superciliosus* as Endangered (Nieto *et al.*, 2015).

All three species of thresher sharks were listed in Appendix II of CITES on 02/01/2017 (Entry into effect delayed by 12 months, i.e. until 04 October 2017). The species covered are the bigeye thresher *A. superciliosus*, and the look-alike species common thresher *A. vulpinus* and pelagic thresher *A. pelagicus*. This listing went into effect in October 2017.

11.13 Management considerations

There is limited knowledge of the stock structure or the exploitation status of these two species of thresher shark occurring in the NE Atlantic.

Liu *et al.* (1998) considered *Alopias* spp. to be particularly vulnerable to overexploitation; requiring a close monitoring because of their high vulnerability resulting from low fecundity and relatively high age of sexual maturity.

The 2008 Ecological risk assessments (ERA) undertaken by ICCAT for eleven pelagic sharks indicated that the bigeye thresher has the lowest productivity and highest vulnerability with a productivity rate of 0.010. In this study common thresher was ranked 10th, with a productivity rate of 0.141 (ICCAT, 2009). The ERA was then updated and expanded notably with the addition of five species and the consideration of interactions between stocks and fisheries in 2012. This new ERA led to similar conclusion to the previous one, with bigeye thresher appearing as the most vulnerable species whereas common thresher gets an intermediate rank within the 20 stocks considered (Cortés *et al.*, 2015).

In 2009, the International Commission for the Conservation of Atlantic Tuna (ICCAT, 2009) recommended the following:

1. "CPCs (The Contracting Parties, Cooperating non-Contracting Parties, Entities or Fishing Entities) shall prohibit, retaining on board, transhipping, landing, storing, selling, or offering for sale any part or whole carcass of bigeye thresher sharks (*Alopias superciliosus*) in any fishery with exception of a Mexican small-scale coastal fishery with a catch of less than 110 fish;
2. CPCs shall require vessels flying their flag to promptly release unharmed, to the extent practicable, bigeye thresher sharks when brought along side for taking on board the vessel;
3. CPCs should strongly endeavour to ensure that vessels flying their flag do not undertake a directed fishery for species of thresher sharks of the genus *Alopias* spp.*;*
4. CPCs shall require the collection and submission of Task I and Task II data for *Alopias* spp. other than *A. superciliosus* in accordance with ICCAT data reporting requirements. The number of discards and releases of *A. superciliosus* must be recorded with indication of status (dead or alive) and reported to ICCAT in accordance with ICCAT data reporting requirements;
5. CPCs shall, where possible, implement research on thresher sharks of the species *Alopias* spp. in the Convention area in order to identify potential nursery areas. Based on this

research, CPCs shall consider time and area closures and other measures, as appropriate."

Some of these recommendations appear to have been acted on by the EU (see Section 11.2.4). In 2010, the General Fisheries Commission for the Mediterranean (GFCM) adopted ICCAT's thresher shark Recommendation (banning retention of bigeye threshers *A. superciliosus*).

11.14 References

Aalbers, S.A., Wang, M., Villafana, C., Sepulveda, C.A. 2021. Bigeye thresher shark *Alopias superciliosus* movements and post-release survivorship following capture on linked buoy gear. *Fisheries Research*, 236: 105857.

Braccini, M., Van Rijn, J., and Frick, L. 2012. High post-capture survival for sharks, rays and chimaeras discarded in the main shark fishery of Australia? *PloS One*, 7(2), e32547, 1–9.

Cao, D-M., Song, L-M., Zhang, Y., Lv, K-K., and Hu, Z-X. 2012. Environmental preferences of *Alopias superciliosus* and *Alopias vulpinus* in waters near the Marshall Islands. *New Zealand Journal of Marine and Freshwater Research*, 45: 103–119.

Carlson, J.K., and Gulak, S.J.B. 2012. Habitat use and movements patterns of oceanic whitetip, bigeye thresher and dusky sharks based on archival satellite tags. SCRS/2011/099.

Cartamil, D., Wraith, J., Wegner, N.C., Kacev, D., Lam, C.H., Santana-Morales, O., Sosa-Nishizaki, O., Escobedo-Olvera, M., Kohin, S., Graham, J.B. and Hastings, P. 2016. Movements and distribution of juvenile common thresher sharks *Alopias vulpinus* in Pacific coast waters of the USA and Mexico. *Marine Ecology Progress Series*, 548: 153–163.

Cortés, E., Domingo, A., Miller, P., Forselledo, R., Mas, F. *et al.* 2015. Expanded ecological risk assessment of pelagic sharks caught in Atlantic pelagic longline fisheries. Collect. Vol. Sci. Pap. ICCAT 71, 2637–2688

Ellis, J. R. 2004. The occurrence of thresher shark off the Suffolk coast. *Transactions of the Suffolk Naturalists' Society*, 40: 73–80.

Ellis, J. R., McCully Phillips, S. R. and Poisson, F. 2017. A review of capture and post-release mortality of elasmobranchs. *Journal of Fish Bio*logy, 90: 653–722.

Fernandez-Carvalho, J., Coelho, R., Amorim, S., and Santos, M. 2012. Maturity of the bigeye thresher (*Alopias superciliosus*) in the Atlantic Ocean. SCRS/2011/086.

Fernandez-Carvalho, J., Coelho, R., Erzini, K., and Nevs Santos, M. 2011. Age and growth of the bigeye thresher shark, *Alopias superciliosus,* from the pelagic longline fisheries in the tropical Northeastern Atlantic Ocean, determined by vertebral band counts. *Aquatic Living Resources*, 24: 359–368.

Finotto, L., Barausse, A. and Mazzoldi, C. 2016. In search of prey: the occurrence of Alopias vulpinus (Bonnaterre, 1788) in the northern Adriatic Sea and its interactions with fishery. *Acta Adriatica*, 57: 295–304.

ICCAT. 2009. Recommendation Rec.09-07 by ICCAT on the conservation of thresher sharks caught in association with fisheries in the ICCAT convention area.

ICCAT. 2009. Report for biennial period 2008–2009; Part I (2008). Vol. 2. SCRS. 271 pp.

ICCAT. 2020. Report for biennial period, 2018-19 PART II (2019). Vol. 2. SCRS. 462 pp.

ICES. 2009. Report of the Joint Meeting between ICES Working Group on Elasmobranch Fishes (WGEF) and ICCAT Shark Subgroup, 22–29 June 2009, Copenhagen, Denmark. ICES CM 2009/ACOM:16, 424 pp.

ICES. 2012. ICES Implementation of Advice for Data-limited Stocks in 2012 in its 2012 Advice. ICES CM 2012/ACOM:68. 42 pp.

ICES. 2015. Report of the Working Group on Elasmobranch Fishes (WGEF), 17–23. June 2015, Lisbon, Portugal. ICES CM 2015/ACOM:19. 711 pp

Kinney, M.J., Kacev, D., Sippel, T., Dewar, H., and Eguchi, T. 2020. Common thresher shark *Alopias vulpinus* movement: Bayesian inference on a data-limited species. *Marine Ecology Progress Series*, 639: 155–167.

Kneebone, J., Bowlby, H., Mello, J.J., McCandless, C.T., Natanson, L.J., Gervelis, B., Skomal, G.B., Kohler, N., Bernal, D. 2020. Seasonal distribution and habitat use of the common thresher shark (*Alopias vulpinus*) in the western North Atlantic Ocean inferred from fishery-dependent data. *Fishery Bulletin*, 118(4): 399–412.

Liu, K.-M., Chiang, P.-J., and Chen, C.-T. 1998. Age and growth estimates of the bigeye thresher shark, *Alopias superciliosus*, in Northeastern Taiwan waters. Fishery Bulletin, 96: 482–491.

Morales, M.J.A., Mendonça, F.F., Magalhães, C.O., Oliveira, C., Coelho, R., Santos, M.N., Cruz, V.P., Piercy, A., Burgess, G., Hazin, F.V., and Foresti, F. 2018. Population genetics of the bigeye thresher shark *Alopias superciliosus* in the Atlantic and Indian Oceans: implications for conservation. *Reviews in Fish Biology and Fisheries*, 28(4): 941–951.

Moreno, J., and Moron, J. 1992. Reproductive biology of the bigeye thresher shark, *Alopias superciliosus* (Lowe, 1839). *Australian Journal of Marine and Freshwater Research*, 43: 77–86.

Musyl, M.K., Brill, R.W., Curran, D.S., Fragoso N.M., McNaughton, L.M., Nielsen, A., Kikkawa, B.S., Moyes C.D. 2011. Postrelease survival, vertical and horizontal movements, and thermal habitats of five species of pelagic sharks in the central Pacific Ocean. *Fishery Bulletin*, 109(4):341–368.

Nakano, H., Matsunaga, H., Okamoto, H., and Okazaki, M. 2003. Acoustic tracking of bigeye thresher shark *Alopias superciliosus* in the eastern Pacific Ocean. *Marine Ecology Progress Series*, 265: 255–261.

Natanson, L.J., Hamady, L.L. and Gervelis, B.J. 2016. Analysis of bomb radiocarbon data for common thresher sharks, *Alopias vulpinus*, in the northwestern Atlantic Ocean with revised growth curves. *Environmental Biology of Fishes*, 99: 39–47.

Nieto, A., Ralph, G.M., Comeros-Raynal, M.T., Kemp, J. *et al.* 2015. European Red List of marine fishes. Luxembourg: Publications Office of the European Union, iv + 81 pp.

Poisson F. and Séret B. 2009. Pelagic sharks in the Atlantic and Mediterranean French fisheries: Analysis of catch statistics. ICCAT SCRS/2008/134. Collective Volume of Scientific Papers - ICCAT, 64(5): 1547–1567.

Preti, A., Soykan, C.U., Dewar, H., Wells, R.J.D., Spear, N., Kohin, S. 2012. Comparative feeding ecology of shortfin mako, blue and thresher sharks in the California Current. *Environmental Biology of Fishes*, 95: 127–146.

Teo, S., Garcia Rodriguez, E. and Sosa-Nishizaki. O. 2018. Status of Common Thresher Sharks, *Alopias vulpinus*, Along the West Coast of North America: Updated Stock Assessment Based on Alternative Life History. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-SWFSC-595. https://doi.org/10.7289/V5/TM-SWFSC-595.

Tsai, W.-P., Chang, Y.-J. and Liu, K.-M. 2019. Development and testing of a Bayesian population model for the bigeye thresher shark, *Alopias superciliosus*, in an area subset of the western North Pacific. Fisheries Management and Ecology. 26. 10.1111/fme.12347.

Weng, K. C., and Block, B. A. 2004. Diel vertical migration of the bigeye thresher shark (*Alopias superciliosus*), a species possessing orbital *Retia mirabilia*. *Fishery Bulletin*, 102: 221–229.

Table 11.1. Thresher sharks in the Northeast Atlantic and Mediterranean Sea. Reported landings of thresher sharks (1997 to 2018; ICCAT data, accessed June 2021). An unknown proportion of thresher sharks are reported in combined sharks. Areas are ADRI: Adriatic Sea; AZOR: Azores; IONIA: Ionian Sea; MDRA: Madeira; MEDI: Mediterranean Sea; NE: Northeast Atlantic; and S.SIC: Strait of Sicily.

Flag	Area	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Algerie	MEDI																		
China (Taipei)	NE															0.2	2	1.2	0.1
Curaçao	NE																		
El Salvador	NE																		
Denmark	NE																		
Spain	MEDI	3.5	7.2	6.7	9.2	9	25.3	0.4	1.1			2.5	2.7	0.2					
	NE	190.3	167.4	49.6	42.1	109	48.6	26.1	63.2			43.9	70.4	77.7					
France	MEDI											5.7	9.6	5.7	1.6	1	0.5	1.4	
	NE								23.3	18.5		31.2		26	25.3	40.6	6.7	30.9	
Ireland	NE				0.1			0	0.1		0.3								
Italy	MEDI											7.4	5.5	13.9	4.1			21.3	
	ADRI																		2
	IONIA																		0
	S.SIC																		0.7
Malta	MEDI	0.1	0.7	0.2	1.4							0.2	0.1	0.3	0.1	0.1			
Portugal	AZOR									8.1	11.9	16.4	7.5	21.3	0.6				
	MDRA									0.1	1	3.1		0.1					
	MEDI						0.5				0.1								
	NE		0	1.3	1.8	1.6	21.2	17.5	20.9		94.5	79	43.8	43.1	15		0.6	1.4	
UK	NE										0	1.1	0.8	0.7	1.6	1.3	0.8	1.1	2
Guatemala	NE																		
Korea	NE																	0.3	
Liberia	NE																		
Mauritania	NE																		
Panama	NE																		
Russian Fed.																			
Senegal	NE												2.5	9					
TOTAL		193.8	175.3	57.8	54.6	119.6	95.7	44.1	108.6	26.7	107.8	190.5	142.9	198	48.5	43.3	10.6	57.6	4.9

Table 11.1 cont'. Thresher sharks in the Northeast Atlantic and Mediterranean Sea. Reported landings of thresher sharks (1997 to 2019; ICCAT data, accessed June 2021). An unknown proportion of thresher sharks are reported in combined sharks. Areas are ADRI: Adriatic Sea; AZOR: Azores; IONIA: Ionian Sea; MDRA: Madeira; MEDI: Mediterranean Sea; NE: Northeast Atlantic; and S.SIC: Strait of Sicily.

Flag	Area	2015	2016	2017	2018	2019
Algeria	MEDI	0.4			0.9	18.7
China (Taipei)	NE	0.8	1	0.2	0.4	0.2
Curaçao	NE			0		
El Salvador	NE			0		
Denmark	NE					0.4
Spain	MEDI					
	NE			0.1		
France	MEDI	2.5				0.6
	NE	38.8	35.2	55.9	44.6	47.2
Ireland	NE					
Italy	MEDI		0.5	2.5	1.2	1.5
	ADRI					
	IONIA					
	S.SIC					
Malta	MEDI					
Portugal	AZOR					
	MDRA					
	MEDI					
	NE					
UK	NE	2.5	3		0.6	0.6
Guatemala	NE			0		
Korea	NE	0.5				
Liberia	NE				0.5	
Mauritania	NE		13.2			
Panama	NE			0		
Russian Fed.	NE					0
Senegal	NE					
TOTAL		45.6	52.9	58.8	48.3	69.1

Table 11.2. Thresher sharks in the Northeast Atlantic and Mediterranean Sea. Reported landings of thresher shark by species and nation for EU and UK (ICCAT data, accessed June 2021). An unknown proportion of thresher sharks are reported in combined sharks. ALV = *Alopias vulpinus*, BTH = *Alopias superciliosus*, THR = *Alopias* spp.

Year	Denmark	Spain			France			Ireland		Italy	Malta		Portugal			United Kingdom
	ALV	THR	BTH	ALV	THR	BTH	ALV	THR	ALV	ALV	BTH	ALV	THR	BTH	ALV	THR
1997		25.2	148.1	30.1								0.1				
1998		26.9	103.8	43.9								0.7		0.0		
1999		56.3										0.2			1.3	
2000		22.6	21.0	7.7					0.1			1.4	1.8			
2001		61.6	35.4	21.0									1.6			
2002		24.5	38.0	11.4											21.7	
2003		1.3	17.5	7.7				0.0							17.5	
2004		10.8	37.4	16.1			23.3	0.1							20.9	
2005							18.5								8.1	
2006									0.3						107.5	0.0
2007			32.1	14.3			36.9			7.4		0.2	2.8	0.0	95.7	1.1
2008		73.1					9.6			5.5		0.1		0.6	50.7	0.8
2009			50.1	27.7			31.7			13.9		0.3			64.4	0.7
2010							27.0			4.1		0.1		0.7	15.0	1.6
2011					0.2	0.1	41.3					0.1				1.3
2012							7.2								0.6	0.8
2013							32.3			21.3	0.0			0.1	1.3	1.1
2014										2.7						2.0
2015				0			41.3			0						2.5
2016							35.2			0.5						3.0
2017			0.1				55.9			2.5						
2018							44.6			1.2						0.6
2019	0.4						47.8			1.5						0.6
TOTAL	0.4	302.4	473.9	180.0	0.2	0.1	453.0	0.1	0.4	60.6	0.0	3.2	6.2	1.4	404.7	16.3

Table 11.3. Thresher sharks in the Northeast Atlantic and Mediterranean Sea (FAO areas 27 and 37). Reported landings of thresher shark (*Alopias* spp.) for the period 2005–2020 (Data following the 2016–2021 data calls). Data are considered preliminary and more dedicated studies to refine a time series of thresher shark landings is required.

Country	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Denmark													<0.1		0.3	0.2
France	33.1	36.2	42.1	26.5	38.7	28.0	51.3	34.0	33.6	43.1	38.8	70.3	55.9	44.6	47.2	62.4
Ireland		0.3														
Netherlands			0.1									<0.1				
Portugal	49.4	78.9	54.8	22.9	27.2	12.7	3.3	0.6	1.3	0.2	0.9	0.6	1.0	0.3	0.2	0.5
Spain	4.2	10.6	32.2	97.0	35.0	0.2	<0.1	0.1								
UK	0.4	<0.1	1.1	0.8	0.7	1.6	1.3	0.8	1.1	2.0	2.5	3.0		0.6	0.6	0.7
Total	87.0	126.0	130.2	147.2	101.6	42.6	56.0	35.5	36.0	45.3	42.2	73.9	56.8	45.6	48.2	63.8